TOWARDS PARADIGM SHIFT

IN PUBLIC SECTOR INNOVATION

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ABSTRACT

Societal challenges, together with decreasing public finance, require a new approach to public administration practices. This study is focused on citizen co-creation in the context of public sector innovation. The aim of the study is to find out how could citizens be bettter engaged in designing of public services and what does that require from the public sector innovation process. The paper argues that service design and current public sector innovation have a similar ethos. Service design approach can be utilised to include citizens in public sector innovation process. This makes service design as a practical tool in public sector innovation process. The research data was collected during the three case studies of the WeLive project that applied service design involving the citizens in the development of digital public services. The findings indicate that service design can contribute to the empowerment and sustainable development of the citizen-driven service innovation in public sector.

KEYWORDS

Public Sector, Public Sector Innovation, Service Design, Co-creation, Collaborative Innovation, Marketing Management

1. INTRODUCTION

Public services have a major impact on our lives as individuals and communities. The very important role for public sector is consequently providing services for citizens, which support well-being and prosperity in cities and municipalities. However, the public sector in different countries are encountering unprecedented challenges concerning issues such as aging society, environment, health, safety, polarization and poverty (van Bueren et al., 2003; Eggers & Singh, 2009). The complex challenges, which are also called as wicked problems, are difficult to solve without strong support from society as a whole (van Bueren et al., 2003). Consequently, fundamental socio-economic challenges together with decreasing public finance require a new approach to public administration innovation practices by taking advantage of collaborative approach.

Innovation research has its roots in the era of rapid industrialization and mainstream innovation practices focuses on technological innovation within manufacturing (Korhonen, 2016). Innovation activities and research have originally been focused on private sector manufacturing but in the past decade the need has been raised to adapt novel innovation management processes into public sector (e.g. Albury, 2005; Windrum, 2008; Bason, 2010; Merger & Decouza, 2013). However, the public sector lags still behind adopting and implementing new innovation methods (de Vries et al., 2016), although innovations are indispensable and play a key role in changing public sector services to better responding to citizens' needs and meet the wicked problems that governments encounter.

At the same time, while services have become the most important economic power in the world (e.g. Ostrom et al., 2010; Bitner and Brown, 2008), the nature of services and the pace of change have shifted radically (e.g. Patricio et al., 2010; Ostrom et al., 2010). This global phenomenon has raised many questions that need to be addressed for service researchers and practitioners, and

that have remarkable implications for the future of the global economy, as well as the well-being of societies and the quality of people's lives worldwide (Bitner & Brown, 2008). Moreover, services are dynamic processes that take place over a specific period of time and consist of several touchpoints of interaction. Polaine et al. (2013) describe that:" *services are relationships between providers and customers, and more generally, that they are highly complicated networks of relationships between people inside and outside the service organization*". (Polaine et al., 2013; p. 36). In general, the nature of services is complex, which makes their innovation process challenging. Consequently, services in public sector contain also same complexity and, in addition, services are based on statutory rights (Hartley, 2005 in Sørense & Torfing, 2011).

Service design approach has become popular among practitioners innovating solutions to both private and public sector during the past ten years (Andreassen et al., 2016). In their attempt to develop an attractive and sustainable market offering, service leaders have increasingly turned to service design and design thinking (Brown, 2008). However, hardly any scientific and empirically grounded knowledge of service design in the public sector innovation can be found. Very few studies deal with design thinking (Bason, 2010), service design (Karwan & Markland, 2006; Ojasalo & Kauppinen, 2017) or service-dominant-logic (Osborne et al., 2013, 2015) in public sector.

We examined the selected case studies primarily from engaging citizens in public innovation activities and from supporting their innovation activity point of view. The research questions of this study are thus: (1) How to extend current public sector innovation framework and practices to better adapt co-creation approach into innovation process form citizens point of view? (2) How the principles of service design approach can be utilised in public sector innovation process and what kind of service design activities could benefit public sector when involving citizen in development of public digital services?

2. PUBLIC SECTOR INNOVATION PROCESS STRENGTHENED BY THE NEW BUSINESS LOGICS

Innovation practices in the public sector are a new area of research that emerged after the millennium change (Moore & Hartley, 2008; Nelson, 2008; Windrum, 2008; Jäppinen, 2011 in Jäppinen, 2014). According to Langergaard (2011), three theories of public governance management can be seen in the public sector's history, namely Public administration, New Public Management (NPM), and Networked Governance. NPM trend in 90' led many governments to implement ideas from business management into the public sector aiming to enhance its efficiency as a provider of public services and develop further management skills of the public sector managers (Windrum, 2008). In addition, a citizen was seen as a customer in a new management model (Langergaard , 2011). However, the efficiency and effectiveness was the most important aspects of NPM (de Vries et al., 2016) and the innovation activity in public sector was often confined to an idea that seeks to get more with less resources. Later, NPM's strong market driven approach transformed more into customer centered focus and quality management (Hyyryläinen, 2014). Network Governance paradigm aim to involve different organisations from the private, public and voluntary sector and trend change the citizens role as a co-producer (Langergaard, 2011). Finally, NPM and Networked Governance incorporate both the idea of involving a customer in the innovation process of the public sector (Langergaard , 2011).

The prevailing public management theory and practice are been criticized for being appropriate due to focusing on intraorganizational processes instead of interorganizational delivery of public services, and due to drawing upon management theory derived from the GDL ignoring the reality of public services as "services" (Osborne et al. 2013; Radnor et al. 2014). This results in a fundamental error within the the New Public Management (NPM) paradigm (Osborne et al. 2013). Further, they regard this theory very ill-suited to adapt the focus on service systems and

relational governance that is at the heart of the New Public Governance. (Osborne et al. 2013). Consequently, there is a need for paradigm change in public sector management. On the other hand, the paradigm change has already taken place in the field of service marketing management, which could be helpful in changing public sector management. According to Osborne (2010) the service management literature could be enhanced in public service delivery and management.

When incorporating new management and innovation ideas into the public sector, it is essential to remember that the public sector have their own special features apart from private sector. Osborne at al. (2013) highlight that adopting business practices from private sector is not a simple straightforward task. Moreover, developing a business in the private sector is quite different from the public sector, which has to take into account social goals in addition to financial sustainability (Osborne at al., 2013). Also, customer satisfaction is not the only factor to measure the performance of public sector organisations (Osborne at al., 2013). In turn, Nutt (2005) appoints the distinctive features of the public sector in terms of decision-making and operability. For example, public organizations are dependent on tax revenue, which are provided by an oversight body such as a legislature. Moreover, they are often big organizations filled with bureaucracy and their functions are ruled by laws and regulations (Windrum, 2008). In addition, there are no competitors in the public sector that could serve as a benchmark for assessing service output (Potts & Kastelle, 2010). All above creates challenges for the public sector innovation process.

2.1. CITIZEN PARTICIPATION IN PUBLIC SECTOR INNOVATION

New public sector management and innovation approaches emphasize a more open model of design, production and delivery of public services leveraging on the collaboration between citizens, companies, and voluntary sector. European Union’s report (Capgemini et al., 2010)

highlights that citizens' involvement in the design process of public services enables to increase service availability and improve service delivery, create more personalized services, increase the speed of delivery and improve the possibilities for citizens to reach services. In addition, from the economics point of view, the innovations and the ability to produce and utilize public services more efficiently are often seen as a crucial source of prosperity for people, companies and regions (Windrum, 2008; Jäppinen, 2011). Therefore, the interest is growing in the public sector to co-create innovations with citizens and other stakeholders (Harris & Albury, 2009; Eggers & Singh, 2009; Bommert, 2010; Sørensen & Torfing, 2011; Sørensen & Torfing, 2012; Morrar, 2015).

Characteristics	**Non-participation**	**Staged participation: testing and feedback**	**Staged participation: collaboration**	**Participation as design-in-use**
Relationship: participation/design/use	No participation, design ≠ use	Participation informs design	Participation informs design, use and contexts of use	Participation = design during use, in the context of use
Roles	Expert activity only	Experts (designers) invite users to test, give feedback, give ideas for product development	Experts and users collaborate at the specifications level	Users design (program, develop, choose, configure, connect) / Experts meta-design

Table 1. The types of participation in the design of digital technology and their characteristics by Saad-Sulonen (2014)

Saad-Sulonen (2014) has divided citizen participation into four categories (Table 1) as following: In the *'non-participation'* level public sector facilitates and manages the activities. It is entirely an administration-centric approach that does not involve citizens in the innovation process. The *'staged participation: testing and feedback'* level of participation consists typically of e-participation tools that enable citizens to give feedback and recommendations related to alternative design solutions. In the *'staged participation: collaboration'* level participants collaborate with each other in setups that have been organised and facilitated by the public sector, which also take advantage of the development results. The last type of participation

'participation as design-in-use' is more self-organised activities by networked communities, in which they ideate and develop new solutions during the use. (Saad-Sulonen, 20014).

Binder and Brandt (2008) describe that "*new design opportunities are often sought across organizational and institutional boundaries*". As earlier was mentioned in the public sector is growing interest to involve different actor into co-creation process to innovate new public services. The aim of the co-creation methods is to involve citizens and stakeholders actively outside of the boundaries into the innovation and design processes. Bason (2010) mentioned two reasons why co-creation is beneficial for public sector: 1) Divergence produce variety of ideas to choose, and 2) connecting citizens and other stakeholders to whole innovation process is a powerful way to enhance the development process. Furthermore, the co-creation methods help users and stakeholders to express their feelings, experiences and knowledge and encourage them to take a role of expert and become part of a design team (Visser et al 2005). Bommert (2010) indicates that collaborative innovation would be suitable innovation framework for public sector, which can be helpful to solve unmet challenges. The key features of collaborative innovation are, according to Bommert (2010): 1) the innovation process is open, and 2) the private, third sector and citizens are integrated into the innovation process as early as possible. The collaborative innovation process contains four phases: idea generation, selection, development, and diffusion (Bommert, 2010). The process aims to open the different phases of the innovation cycle to various actors and support comprehensively the innovation process of the public sector. However, the process presented by Bommert (2010) does not provide very detailed information about activities or actors roles and characteristics in different phases.

Figure 1 presents Bason's (2010) process that help to orchestrate the process of co-creation in the public sector. The process contains seven stages: (1) *Framing* – in the first phase is needed to identify the problem or opportunity. (2) Knowing – in the second phase users and stakeholders

are involved actively outside of the boundaries into the innovation processes. (3) Analysing – the information acquired in the knowing phase is organized into structured knowledge. (4) Synthesising – The collected material is broken down into the conceptual parts of the analysis and the resulting components are re-synthesized into innovations in the synthesis. (5) Creating – An Iterative stage where prototypes and testing help develop the idea forward. (6) Scaling – the widespread introduction of innovative new solutions. (7) Learning – innovation is iterative process, during which are learnt about mistakes. However, the Bason's (2010) model is organizationally oriented and it is suitable for public sector's internal innovation process, which starting point is their strategic objectives. Comparing the Bason's (2010) model with Saad-Sulonen (2014) presented types of participation in the design, it can be stated that citizens participate in the Bason's model either by providing feedback or by participating in the co-creation workshops organised by public body. Consequently, the model does not follow the principle of open innovation and it ignores innovation-based practices.

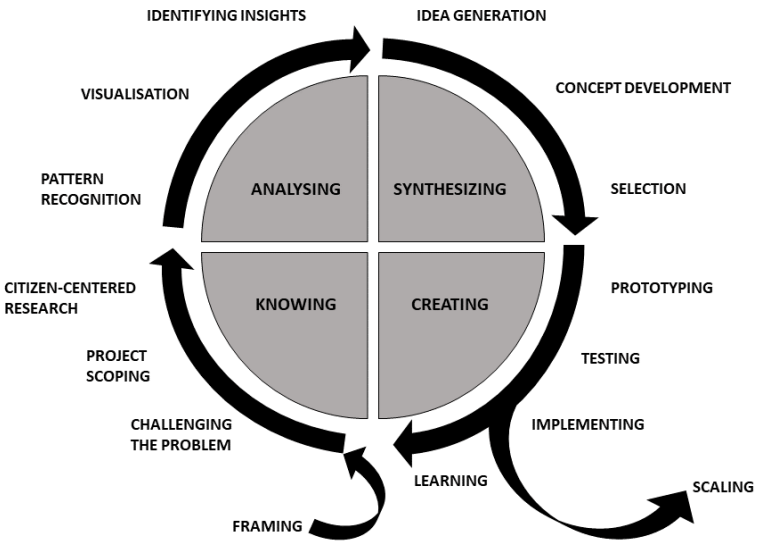

Figure 1. Co-creation process in the public sector by Bason (2010)

Roles	Charasteristics
Webber	(similar to relationship promoter) Acts as the initiator, decides on potential actors
Instigator	Influences actors' decision-making processes
Gatekeeper	(similar to power promoter) Possesses resources
Advocate	Background role, distributes information externally
Producer	Contributes to the development process
Planner	Participates in development processes; input in the form of intangible resources
Accessory provider	provider Self-motivated to promote its products, services, and expertise
Tester	Tests innovation in (customers') real-life environments
Contributor	Collaborates intensively with other actors in the network to develop new products, services, processes or technologies
Co-creator	The user co-designs a service, product or process together with the company's R&D team and the other living lab actors
Coordinator	Coordinates a group of participants
Builder	Establishes and promotes the emergence of close relationships between various participants in the living lab
Messenger	Forwards and disseminates information in the living lab network
Facilitator	Offers resources for the use of the network
Orchestrator	Guides and supports the network's activities and continuation; tries to establish trust in the network to boost collaboration in line with the living lab's goals
Integrator	Integrates heterogeneous knowledge, development ideas, technologies or outputs of different living lab actors into a functional entity
Informant	Brings users' knowledge, understanding and opinions to the living lab

Table 2. The participants' roles and characteristics in the context of living lab (Nyström et al., 2014, 491-492 further elaborated by Leminen, 2014, 2016-107)

On the other hand, innovation networks in the private sector serve as extensions of companies where co-operation between different parties is aimed at seeking new types of products and services (Jäppinen, 2011). Nabisan (2008) defines the benefits of network-based collaborative innovation as follows: "*an externally focused approach to innovation and problem solving that relies on harnessing the resources and capabilities of external networks and communities to amplify or enhance innovation speed and innovation outcomes*". Currently, the main sources of external expertise in the public sector innovation process are universities, consultants and networks of public authorities (Feller et al., 2011). Thus, networks enable great possibilities for urban areas, which the public sector should take more advantage of in its own innovation process. Nyström et al. (2014, 491-492) have identified several participants' roles and characteristics in the context of living lab that Leminen, (2014, 2016-107) has further elaborated. Total they have identified 17 participants' roles and characteristics (Table 2).

A new approach to public administration innovation practices is needed in order to promote the emerging culture of participation. In general, private sector is ahead involving customer and other stakeholders in their innovation process and public sector lags behind adopting and implementing innovation methods. In addition, the multi-actor development and innovation process challenge public sector management as well as their current innovation processes.

2.2. SHIFTING FOCUS FROM PRODUCTS TO CUSTOMERS

For Vargo and Lusch service is the process where an actor uses its resources for the benefit of another party (Vargo and Lusch, 2008). Services can be characterized by intangibility, heterogeneity, perishability, and simultaneous production and consumption (Zeithaml et al., 2013). The very experiential nature of services highlights the role of customers (Helkkula & Holopainen, 2011; Zeithaml et al., 2013; Randhawa & Scerri, 2015), thus customers have very vital role in service innovations. Korhonen (2016) goes further and interprets that according to service-dominant logic "*the primary purpose of organizations, markets and society is to provide service which emphasizes the role of service innovation in society*". (Korhonen 2016, 50).

In the 2010s, the academic discussion in service marketing and management has shifted from a manufacturing way of thinking, i.e. goods-dominant logic (GDL), towards service-dominant logic (SDL), service logic, and further, towards customer-dominant logic (CDL). Business logic refers to a strategic mindset of a company that guide conscious decisions made in that company. (Heinonen et al. 2010). Focus of topical academic discussion on business logics is on the identification and formation of customer value (e.g. Vargo and Lusch 2008; Heinonen et al. 2010; Grönroos and Ravald 2011).

New business logics, service-dominant logic (Vargo and Lusch 2004, 2008), service logic (Grönroos 2006, 2008), and customer-dominant logic (Heinonen et al. 2010; Voima et al. 2010) highlight customers' active role in value creation. The fundamental principle of the service-dominant logic is that the value emerges when service is used and experienced by the customer (Vargo and Lusch 2004, 2008). The company offers value propositions and value is always co-created together between the service provider and the customer (Vargo et al. 2008). Value co-creation can be seen as a collaborative process between the producer, the consumer, and other supply and value network partners (Lüftenegger 2014).

Grönroos (2006, 2008) has further developed the idea of SDL and provides an alternative approach, service logic (SL). Service logic proposes that customers are value creators during value-generating processes and in value-supporting interactions, while companies are the facilitators and co-creators that engage themselves in the customers' value creation processes. Thus, the customers not only define the value, but also control the value creation in their own processes (Heinonen et al., 2010; Voima et al., 2010; Grönroos and Ravald, 2011). This means that companies search for possibilities to understand and support the customers' value creation processes (e.g. Grönroos and Ravald, 2011; Grönroos and Voima, 2013) and create resources and means to facilitate customers to create value for themselves (Grönroos 2006).

In the beginning of 2010s the SDL and SL were argued to be still production and interaction focused (e.g. Heinonen et al., 2010; Strandvik et al., 2012). Although the customer was seen as a partner in co-creation, service was viewed from the perspective of a service provider. The customer-dominant logic (CDL) (e.g. Heinonen et al., 2010; Grönroos and Voima, 2013) emphasizes a deeper understanding of the customer's everyday life and the service experience as a long-term, in a context related process. CDL highlights that the value is emerged, when the service becomes embedded in the customer's own context, processes, activities and experiences -

and that why it is essential for companies to understand how the customers' value is formed. Thus, value-in use is formed in two separate, but intertwined processes (customer's and service provider's). CDL therefore takes into account not only the customer, but optimally as many key actors and stakeholders in the service's ecosystem as possible.

Osborne et al., (2013) has provided for the NPM paradigm an alternative approach, which is drawn from service-dominant management theory. This "public service dominant approach" "*emphasizes the distinctive characteristics of services and their impact upon their management, takes a holistic and systemic approach to the delivery of (public) services and acknowledges the central role of service user expectations and experience to the performance of (public) services*" (Osborne et al., 2013, 148). The four propositions by Osborne et al., (2013) constitute the basis of the new approach are: after adopting a public service-dominant approach (1) the citizen and user are regarded as essential stakeholders of the public policy and public service delivery processes and their engagement in these processes adds value to both, (2) the strategic intent of a public service is set as a specific "service promise", which is based on the user expectations and which is supposed to fulfil by the staff, (3) co-production becomes an essential component of public services delivery that places the experiences and knowledge of the user at the core of effective public service design and delivery, and (4) is possible that operations management within public services will lead to more efficient and more effective public services.

The alternative approach for NPM paradigm proposed by Osborne et al. (2013) and Radnor et al. (2014) is a step towards a more open public sector innovation culture. Although SDL has identified the importance of customer participation in the innovation process and customer's role as a partner in value co-creation, service is observed from a service provider's point of view. Consequently, service provider controls, manages and facilitates the whole innovation process, as well as the opening up of the innovation process to third parties. Customers' are usually invited

to test, give feedback and ideas for service development. However, more ingenuous opening up of the innovation process would provide the opportunity for reaching a deeper level of participation. In context of the public sector innovation, it would be not only appropriate, but also sensible.

SL takes the customer participation one step further by acknowledging customers as value creators who define the value and control the value creation in their own processes. Service providers are seen as co-creators responsible for providing resources and means to facilitate customers to create value for themselves. This requires not only knowing the customer's value creation process, but also a more open and participatory innovation process that provides customers with tools to make their tacit knowledge (e.g. thoughts, needs and desires) visible. “Staged participation”, the third type of the four participation levels in the design of digital technology (by Saad-Sulonen 2014) supports collaboration between service provider/ developers and customers. The aim of the collaboration is to inform innovation and design process by building a rich knowledge base with inspiration and insights of customer’s value formation. CDL, in turn, emphasizes a deeper understanding of the customer’s daily life and the service experience as a long-term, in a context related process. According to Saad-Sulonen (2014), citizen participation in the field of digital services may reach a new level, which lies at the intersection of “Participation as design-in-use” and “participation as self-organization”.

Saad-Sulonen (2014) calls the two levels of participation: “Staged participation –collaboration” and “Participation as design-in-use” as “The expanded participatory design approach”. Respectively, SL by Gröönroos (2006, 2008) and CDL by “*The Nordic School of service marketing (Grönroos & Gummesson, 1985; Grönroos, 1991; Edvardsson & Gustafsson, 1999; Gummesson & Grönroos, 2012; Gummesson, 2006) has emphasized that it is the customer that experiences and interprets the value of the service for itself, not someone else. Instead, the*

service provider is seen to make value propositions. In other words, service quality and value depends on the view of the customer (Edvardsson, 1988; Edvardsson & Olsson, 1996) – it is perceived service quality (Grönroos ,1991). Service quality or value is seen to extend beyond cognitive assessment e.g. to emotions (Edvardsson 2005) and values (Enquist et al., 2007); and to be experiential (Holbrook & Hirschman, 1982; Gilmore & Pine II, 2002; Prahalad & Ramaswamy, 2004; Schembri, 2006; Sandström et al., 2008; Helkkula, 2011; Helkkula et al., 2012) and embedded in social systems (Edvardsson et al., 2011).” (Korhonen, 2016, 54).

Thus, when looking at the presented business logics through the framework of the citizen participation by Saad-Sulonen (2014), there may be found some more consistency between them (see Table 3).

Business logic refers to a strategic mindset of a company and its business activities that guide conscious decisions made in that company.	**Goods-dominant logic (GDL)** Value creation takes place inside a company through its own activities.	**Service-dominant logic (SDL)** The company offers value propositions and value is always co-created together between the service provider and the customer (Vargo et al. 2008).	**Service logic (SL)** proposes customers are value creators during value-generating processes and in value-supporting interactions, while companies are the facilitators and co-creators that engage themselves in the customers' value creation processes (Grönroos 2006, 2008)	**Customer-dominant logic (CDL)** emphasizes a deeper understanding of the customer's everyday life and the service experience as a long-term, in a context related process (value-in-use) (e.g. Heinonen et al. 2010, Grönroos & Voima 2013)
The **types of participation** in the design of digital technology and their characteristics by Saad-Sulonen (2014)	**Non-participation** No participation, design ≠ use Expert activity only	**Staged participation: testing and feedback** Participation informs design Experts (designers) invite users to test, give feedback, give ideas for product development	**Staged participation: collaboration** Participation informs design, use and contexts of use Experts and users collaborate at the specifications level	**Participation as design-in-use** Participation = design during use, in the context of use Users design (program, develop, choose, configure, connect) / Experts meta-design

Table 3. Comparing CDL and the framework of the citizens' participation by Saad-Sulonen (2014).

Together these two frameworks could deepen and expand the alternative NPM paradigm approach proposed earlier (by Osborne et al., 2013; Radnor et al., 2014). Preliminary ideas are outlined in Table 4.

ROLES & RESPONSIBILITIES IN THE PUBLIC SECTOR INNOVATION PROCESS	-the public sector controls and manages all innovation activities - the innovation team as the "loyal opposition" - no citizen participation	-the public sector controls**,** manages and facilitates all innovation activities -the other actors are involved as needed (e.g. predominantly experts, citizens) -establishing the core innovation team as a crucial phase -internal and external actors that must be part of the co-creation process	-the public sector manages and facilitates innovation activities --the public sector calls different actors (e.g. citizens, companies, NGOs) for collaborate in the innovation process	-the public sector manages and facilitates "the formal innovation process" -self-organization activities of different actors are supported in the process --the innovation process calls for different actors (e.g. citizens, companies, NGOs) to collaborate - the people's needs and wants in their everyday life act as a driving force for the innovation acitivities
THEORETICAL BACKGROUND	**Non-participation** (Saad-Sulonen 2014) & GDL	**Staged participation: testing and feedback** (Saad-Sulonen 2014) & SDL	**Staged participation: collaboration** (Saad-Sulonen 2014) & SL	**Participation as design-in-use** (Saad-Sulonen 2014) **&** CDL
PHASES OF THE INNOVATION ROCESS				
Frame - aims to identify design challenges and opportunities	-the public sector manages and facilitates activities inside the organization -loyalty and understanding of political motivations and priorities must be balanced against rigorous questioning and reframing	-citizens feedback as a one part of the need identification mechanism -in an ideal situation in the public sector, the people's needs act as a driving force for the design	- the citizens' needs act as a driving force for defining the design challenges -core team of multidisciplinary actors for project scoping -a broader group with individuals from other public bodies having a stake in the project, social innovators from 3rd sector, external experts and academics -a right mix of people kicking-offing the project and systematically discussing the problem definition: - Include crucial stakeholders in terms of ensuring ownership and implementation - Include people with diverse backgrounds, experiences and expertize - A broader group to enlarge the perspective in the framed problem - "Wild cards" to contribute new angles for the innovating	- the citizens' needs act as a driving force for defining the design challenges -citizen-driven innovation activities are taken in account
Challenge	-the public sector manages and facilitates activities inside the organization -the politicians or the top management define the design challenges	-the public sector manages and facilitates activities - the core innovation team define the design challenges	- the public sector publishes "the design challenges" to challenge the various actors in the innovation activities	- the public sector publishes "the design challenges" to challenge the various actors in the innovation activities - design challenges outside the formal process are supported
Co-design Discover -problems, needs and opportunities are identified to address through design -a rich knowledge base with inspiration and insights is build Define -the outputs of the previous phase are analyzed and the	-the public sector manages and facilitates design activities inside the organization -outsourcing is possible (e.g. consultation services)	-the public sector involves other actors (e.g. predominantly experts, citizens, academia) - the roles of the participants can be seen as (modified Leminen 2014): **a informant** (brings users' knowledge, understanding and opinions to the design process), **a producer** (contributes to the development process), **a planner** (participates in development processes; input	--the public sector calls different actors (e.g. citizen(s), developer(s), academia, companies, NGOs) to participate in the design process (of digital services - the public sector provides facilitation (e.g. physical or virtual facilities and moderation) for the design process participation - the roles of the participants can be seen more as (modified Leminen 2014):	--the public sector calls different actors (e.g. citizen(s), developer(s), academia, companies, NGOs) to participate in the design process (of digital services - the public sector provides facilitation (e.g. physical or virtual facilities and moderation) for the design process participation -self-organization activities of different actors are enabled and supported - the roles of the participants

findings are synthesized into a limited number of opportunities Develop -the initial briefs into a service for implementation are developed -design service components in detail and as part of the holistic experience are defined - concepts are iteratively tested with users Deliver - the final concepts are taken through final testing, and presented		in the form of intangible resources), or **a tester** (tests innovation in her/his real-life environments)	**an accessory provider** (self-motivated to promote its products, services, and expertise), **a contributor** (collaborates intensively with other actors in the network to develop new products, services, processes or technologies), or **a co-creator** (co-designs a service, product or process together with the actors)	can be seen as (modified Leminen 2014): **a contributor** (collaborates intensively with other actors in the network to develop new products, services, processes or technologies) or **a co-creator** (co-designs a service, product or process together with the actors), **a coordinator** (coordinates a group of participants), **a builder** (establishes and promotes the emergence of close relationships between various participants in the innovation process), **a facilitator** (offers resources for the use of the network), **an orchestrator** (guides and supports the network's activities and continuation; tries to establish trust in the network to boost collaboration in line with the design process goals), or **an integrator** (integrates heterogeneous knowledge, development ideas, technologies or outputs of different actors into a functional entity)
Select & Support	-the public sector manages and facilitates innovation activities inside the organization	-the public sector manages activities in the phase	-the public sector manages and facilitates activities -public sector could involve citizens and other actors for the decision-making	-the public sector manages and facilitates "the formal innovation process" -further development of service ideas and concepts outside the formal process are supported -public sector could involve citizens and other actors for the decision-making
Implement To increase the success rate of implementation, the involvement of people using the solution is crucial	-the public sector manages and facilitates activities inside the organization -outsourcing is possible (e.g. consultation services)	-the public sector manages and facilitates activities - needs strong leadership and change management -understanding the workers and the people affected by the new solutions as a crucial element - "Best practices" - Telling a compelling story - Role modelling - Creating reinforcing mechanisms - Capacity building	-the public sector manages and facilitates activities -involvement of people throughout the organization who will at some point play a role in implementing an running the potential solution: -front-line managers, communication staff, HR professionals, system developers -change management as the new solutions will be implemented in multiple departments	-the public sector manages and facilitates activities -involvement of people throughout the organization who will at some point play a role in implementing an running the potential solution: -front-line managers, communication staff, HR professionals, system developers -change management as the new solutions will be implemented in multiple departments

Table 4. Roles & responsibilities in the public sector innovation process

2.3. SERVICE DESIGN APPROACH

The service design approach is both a set of methods and tools for service designers as well as an emerging multidisciplinary academic field of design research with a focus on complex services.

The service design approach has been extensively disseminated and quickly adapted among design and service researchers and practitioners, because of its methods have proven to be very powerful in involving customers and other stakeholders into the service design process, and thus enhance the value creation process of all actors.

The five core principles of service design thinking: (1) User-centered: services should be experienced thought the users' eyes; (2) Co-creative: all stakeholders should be included in the design process; (3) Sequencing - the service should be visualized as a sequence of interrelated actions; (4) Evidencing: intangible services should be visualised in terms of physical artefacts; and (5) Holistic: the entire environment of service should be considered in the service design process (Stickdorn and Schneider, 2011).

There are several service design process models and frameworks available (e.g. IDEO, 2001; Moritz, 2005; Stickdorn & Schneider, 2011; Liedtka & Ogilvie, 2011; Tschimmel, 2012). They usually consists of three to seven phases, but fundamentally, all service design processes share the same logic and mindset. One of the best known and most used service design process models is the Double Diamond model (Fig. 2), developed by the British Design Council. The design process has been divided into four overlapping phases; (1) In the Discovery phase the designer identifies the problems, needs and opportunities to be addressed through design and builds a rich knowledge base with inspiration and insights. (2) The Define stage is kind of a filter in which the outputs of the previous phase are analyzed and the findings are synthesized into a limited number of opportunities. The main activities in (3) the Definition phase are to develop the initial brief into a service for implementation, to design service components in detail and as part of the holistic experience, and finally to iteratively test concepts with users. In the last phase, (4) the Deliver stage, the final concepts are taken through final testing, signed-off, and produced. (by British Design Council).

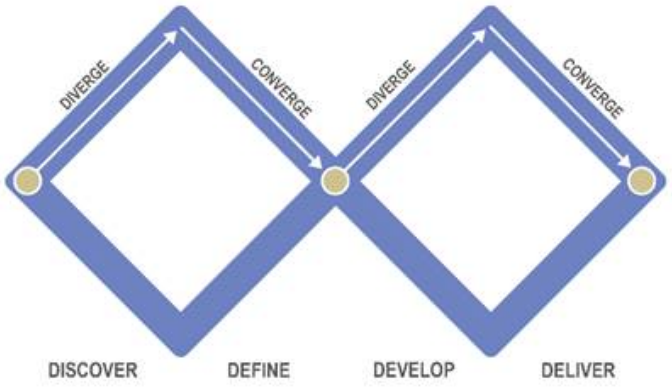

Figure 2. The Double Diamond process by British Design Council.

Service design has adopted methods, tools and techniques from several disciplines, such as interaction and product design, engineering, anthropology, psychology as well as service marketing and management (e.g. Stigliani & Fayard, 2010; Meroni & Sangiorgi, 2011; Miettinen & Valtonen, 2012; Wetter-Edman, 2014). Customers' and end users' creative input is an important source of design ideas. Thus, service designers' creativity is not targeted only towards creating new design solutions, but increasingly towards creating opportunities for creative collaboration with users as well as applying and developing methods and tools that enhance their creativity (Brandt, 2006). Different service design methods, tools and techniques can be used in each stage of service design process, depending on the desired outcome.

3. THREE CASE STUDIES ON PUBLIC SECTOR INNOVATION

This study is focused on citizen participation and innovation in the context of public sector innovation. The aim of the study is to find out **how could citizens be better engaged in the designing of public services and what does that require from the public sector innovation process**.

The case study research was selected because it investigates a contemporary phenomenon within its life context, it uses multiple sources of evidence; and researchers have very little control over events under study (Yin, 2009). Literature review and the case study research approach provide a

frame of reference for detailed contextual analysis of the selected cases. This study is a multiple-case study analysis of three different, discretionary chosen, and experimental design processes cases in a Horizon 2020 project called WeLive (www.welive.eu). The aim of the project was to transform the current administration-centered approach to build public services more into an open innovation and collaborative process that enables easy involvement of citizens, employees, companies, and public administrators. The project applies the service design approach with methods and tools to deliver next generation personalised digital services for citizens. Within the framework of the WeLive project, the city of Vantaa involve higher education institutions as part of its service innovation process. The three case studies were conducted during the multidisciplinary master's degree service design studies (2015-2017). The assignment given to the three-person student groups was twofold: (1) to involve citizens in the service design process of public digital services, and (2) to create a new digital service concept that meets the needs, hopes and wishes of the citizens. The starting point for the design processes were the design challenges identified and presented by the city of Vantaa.

The research data consists of observational material of the implementation of the three design processes of public services and the interviews of the citizens and public sector representatives involved in the three processes. A qualitative analysis, which consists of two stages was used: simplification of research data and solving a mystery (Alasuutari, 1995). The unit of analysis is one selected design process used as a case study. In the all case studies, the qualitative data were analysed in terms of systematic coding and categorization as data reduction, displays, and drawings of data in order to develop a synthesis which grasps the empirical evidence (Alasuutari, 1995; Yin, 2009; Silverman, 2000; Silverman, 2004). The within-case analysis approach was used and it involves detailed case descriptions for each case. In the within-case analysis, the overall patterns, impressions, themes, and processes of service design and public innovation

process emerged from the data and were evaluated based on the theoretical framework discussed earlier.

In all three cases, the progression of the design process followed the same pattern consisting of four different stages: (1) need identification that helped citizens/developers in finding, defining and refining design challenges; (2) facilitated concept idea generation that helped citizens/developers to discover and develop new digital service concepts; (3) prototyping/ testing of the service concepts with end-users and the further developing the concepts based on received feedback; and (4) implementation of the beta version of the new digital service. In addition, the roles of various actors and their involvement / commitment to the development of digital services at various stages were mapped out. The cases are described in more detailed in chapters 3.1 – 3.3.

3.1. CASE: SPORTIT APPLICATION

Laurea conducted a survey to identify the needs of citizens in Helsinki Region during the spring of 2015. In total, 307 people from the Capital Region of Finland took part in the survey. Among the identified needs, welfare and sports were the most popular themes. In addition, the city of Vantaa identified needs and challenges via its internal networks and research. the city of Vantaa presented their identified challenges based on their own research and workshops in the different departments, to Laurea. Laurea's Master's degree courses addressed the needs emerged as the results of the aforementioned survey.

In the concept creation process during the spring 2017 master’s degree courses, 74 citizens with various backgrounds were engaged and as a result, 25 digital service concept ideas were generated. The generated concept ideas were presented to citizens and the representatives of the city of Vantaa. Based on the received comments on different aspects like features and usability, the best identified elements of the sports-themed concepts were combined to develop a new

application. Due to the development, "Sportit" application prototype was developed, preliminarily evaluated and released in the summer 2017. The base idea of the application was to show the selected area's sport facilities with additional info: e.g. contact information, address and services.

During autumn 2017, Sportit application was taken into further development with the focused groups of 23 developers to improve the features, usability and user experience as a correspondence to the results of feedback of the users and alpha testers. In addition a larger developing crowd was reached with an idea contest to develop the application's features, usability and user experience. As a result, four ideas were received to develop the application further. With new visual elements and more specific features, the iterative cycle of development continues to enhance the application.

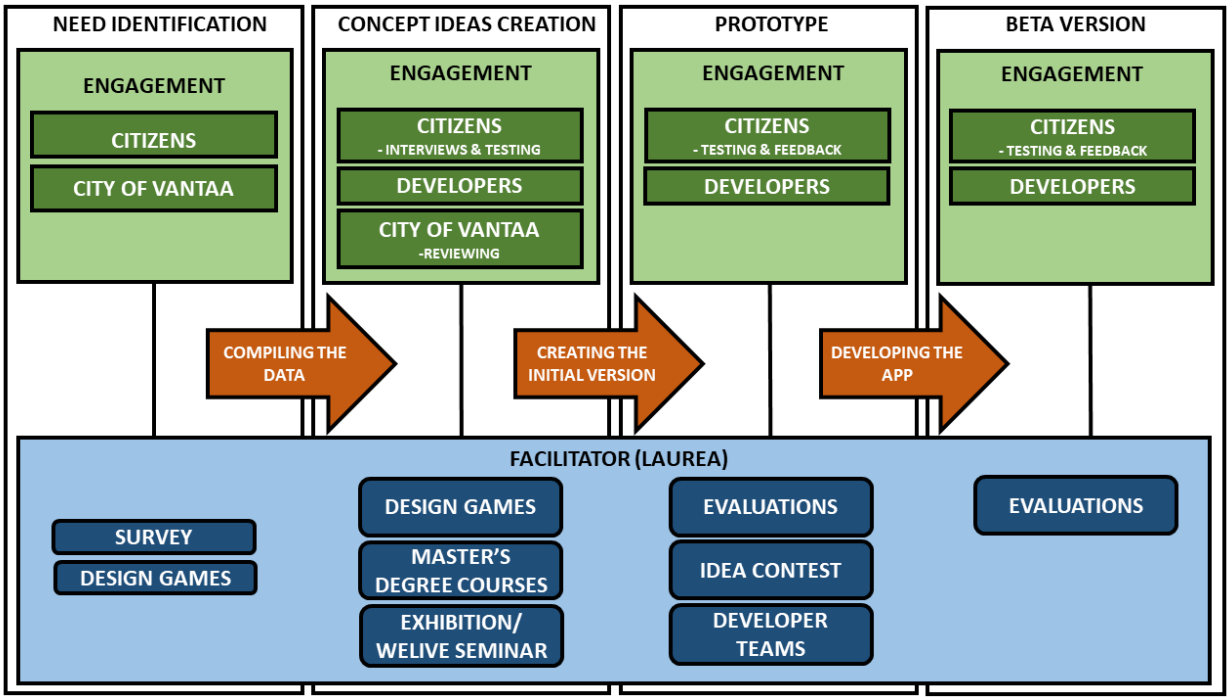

Figure 3. Roles and activities related to Sportit application case

3.2. CASE: BIG STEPS FOR LITTLE PEOPLE -LEARNING GAME APPLICATION

The starting point for the Big Steps for Little People -Learning Game Application was the challenge presented by the city of Vantaa: How could the 3D virtual model of city of Vantaa be used as a basis for services that benefit citizens? The entire city is modeled on a three-dimensional Minecraft world. The 3D urban environment similar to the real world includes, for example, buildings, roads, and forest areas, waterways and many other details.

A group of developers took up the challenge and started to design of a 3D-based service that benefit families with small children. The result of their work was the concept of a digital learning game application using the 3D virtual model of city of Vantaa. The game concept has gathered a lot of encouraging feedback and the design teams would have an interest in continuing to develop the concept. Individual technology experts from the city of Vantaa were interested in the concept and contributed to the further development of the concept by providing 3D model in Unity environment.

All this was based on the person's own interest rather than on the strategic lines of the city's innovation process. However, it is difficult to find support and funding for further development. The design team have been active in seeking for support and funding: e.g. they have participated in Cambridge Venture Camp 2017 training program, which helped them to evaluate further the concept and its commercialization potential. They also participated in Slush start-up conference at November 2017 in Helsinki.

Finally, the Big Steps for Little People -Learning Game Application was found by Finnish Transport Agency in Data Business Future seminar. Finnish Transport Agency maintains national the Digiroad information system that offers a comprehensive, unified, digital format description of the transport network. The material enables the development and productisation of various

types of route planning, navigation, tourism and telematics services. The Big Steps for Little People -Learning Game Application utilizes the data provided by Digiroad: the busy geometry, speed limits, public traffic stops, traffic lights and shields.

The developers have met potential partners and investors. The ongoing negotiations involve companies producing technical solutions. They will also meet with interested investor funds in the near future.

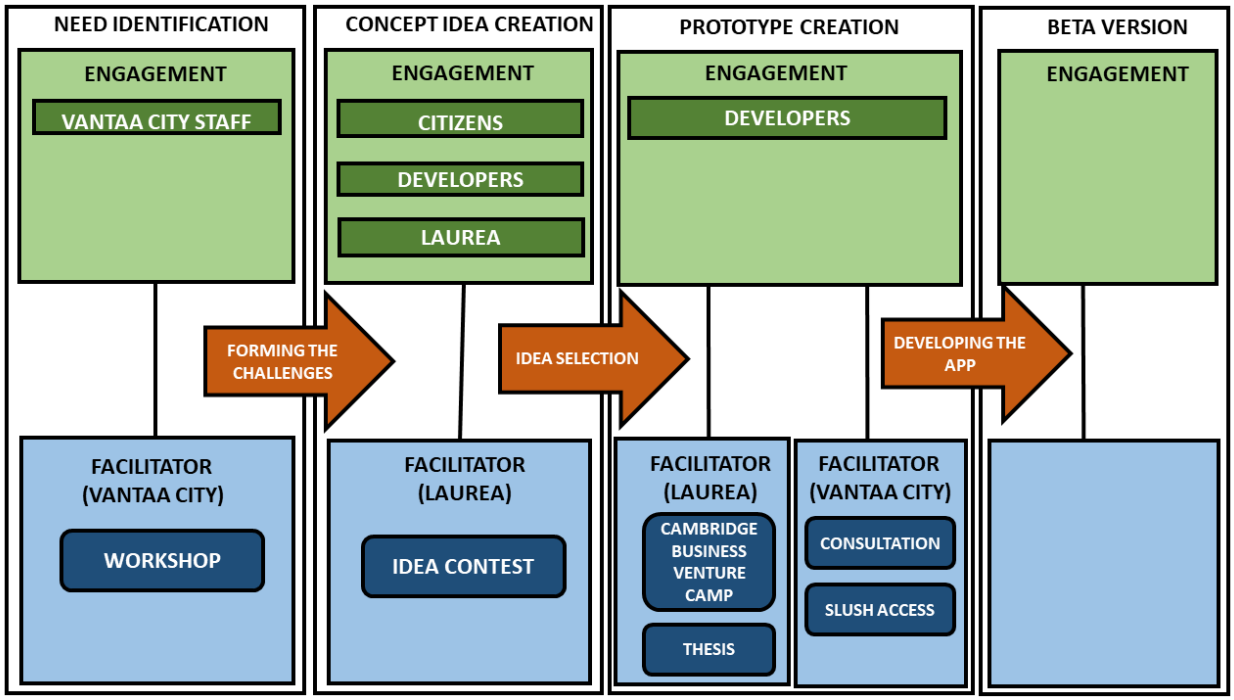

Figure 4. Roles and activities related to Big Steps for Little People -Learning Game Application case

3.3. CASE: POCKET LIBRARY APPLICATION

The first version of Pocket Library service was internally developed by the City of Helsinki and released in 2012. The application gathered few hundred lead-users who regularly used the application. Due to the technical implementation challenges regarding to the reliability of backend systems as well as in the user interface, Helsinki city library ended the service as the cost of maintaining the mobile application would have been too high. Instead of mobile application, Helsinki city library favored web-technology based solution.
As the feedback from the users pointed out the application was missed. Therefore the city of Vantaa library chose to carry out a small scale trial to continue development of the service. However the city of Vantaa library had no sufficient internal development personnel, which forced the library to seek out an outside partner to address the challenge. The city of Vantaa established a collaboration with a small mobile application development company Enisoft Oy, specialized in municipality mobile applications.

In 2015, Enisoft produced a cost-effective prototype of the application for Apple, Android and Windows phone by using its evolved mobile application tools. In 2016 the city of Vantaa started a collaboration with Laurea to create radical innovations in public library services in co-creation manner of approach. Laurea participated in the process with the master's degree course of user centered design students' contribution. The students conducted user interviews, carried out co-design activities with real citizens and investigated opportunity to apply open data as part of the solution. Additional digital library service concepts were created in Laurea during the process.

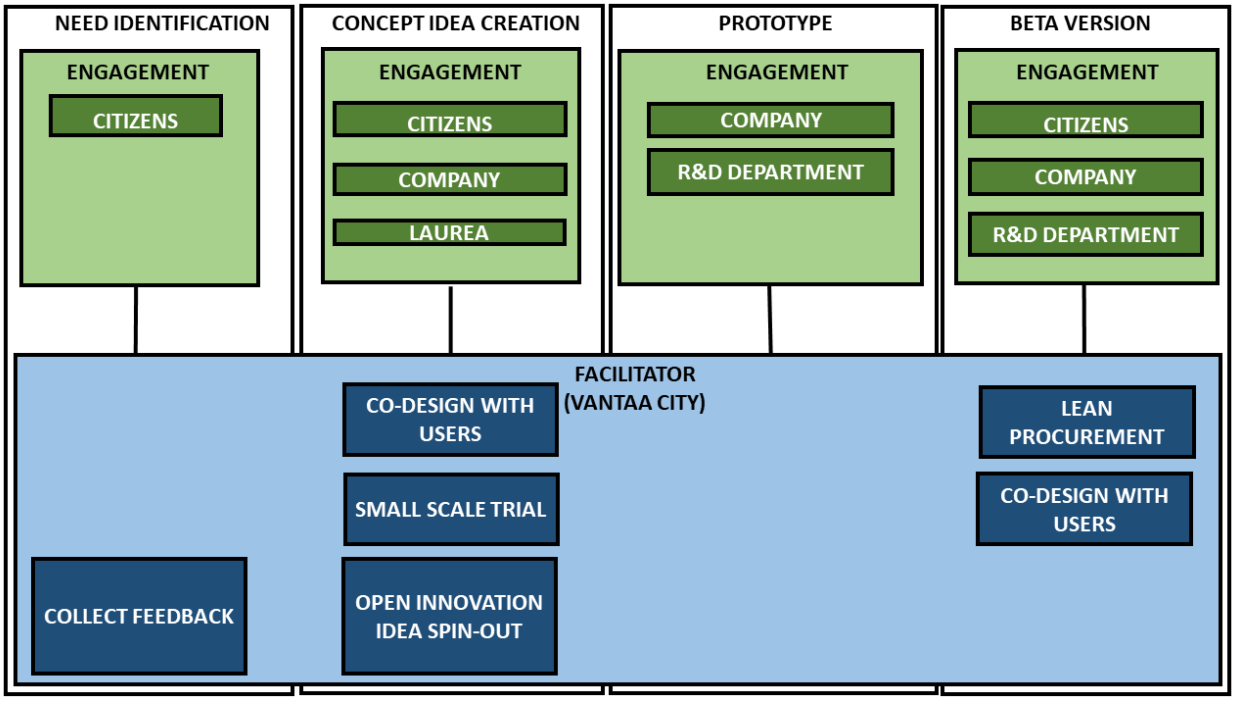

Figure 5. Roles and activities related to Library case

The Pocket Library has been stabilized as a part of HELMET (Helsinki Metropolitan Area Libraries) services and continues to be co-developed with various stakeholders like citizens and suppliers. Open innovation opportunity of reaching other market's by VTT and Enisoft Oy started to materialize at 2017.

4. RESULTS

The three empirical cases hint that in the innovation process of the public sector service delivery, which incorporate the aspect of co-creation, the link between public organizations, citizens and other actors is still non-systematic and occasional in nature. Thus, the link between the current state of collaborative innovation, where the citizen participation in the public sector service delivery is narrowed to co-creation activities organised by public body, fail to reach the "expanded participatory design" (by Saad-Sulonen 2014) level. Consequently, the current public sector innovation process leaves the majority of citizens outside of influencing to the public

service delivery. Finally, the public organisations have not been able to utilise new business logics (SDL, SL, CDL) like with the private sector.

The following two paragraphs summarize the main findings of the study related to research questions. The third paragraph presents a new model based on the cases studies, which extend the Bason's model with the new business logics operatinalized by service design approach.

4.1. RESULTS RELATED TO THE FIRST RESEARCH QUESTION

How to extend current public sector innovation framework and practices to better adapt co-creation approach into innovation process from citizens point of view?

The starting point for the "Big Steps for Little People -Learning Game" Application was the challenge presented by the city of Vantaa. However it was not in the city's intentions to facilitate the application's development process after the concept was created and the responsibility to develop the concept further was left to developers (=citizens). Our research findings brought forward that, even though the city presented the challenge itself, the innovation process it orchestrated only slightly and fragmentarily supported development process, which the designers' themselves independently carried out. In addition, the support was mostly based on one particular city organization representative's personal interest in promoting and sparring the developers. In conclusion, service design and co-creation process should be implemented on the strategic level of city's service delivery process to ensure their occurrence in collaboration activities with external partners.

In Sportit case, it was discovered that it is exceedingly difficult to integrate a development process organized by external developers, into the city's processes without an appointed person in the city organization to take the responsibility to carry out the process. Therefore sufficient funds and human resources should be provided for innovation collaboration within city

organizations. A stated innovation unit able to manage silo crossing activities could orchestrate the entirety and act as a channel for external developers to engage with the city organization. The challenge is to integrate new ways of approaches into the public administration's processes due to the traditional operating culture of public sector, affecting regulations and strictly defined tasks of the staff.

After the ideation phase, ”Big Steps for Little People -Learning Game” concept developers would have needed e.g. technical support, contacts with investors and general feedback from the city organization on how the concept matches the presented challenge. However, it is needed to take account that the developer team had the ownership for the concept. Feller et al. (2011) have identified the intellectual property rights of developed services or products as one of the challenges in co-creation. Consequently, at the very early stage of the innovation process, one needs to agree clearly who owns the developed services or how each stakeholder may exploit the results of the development. IPR ownership and exploitation possibilities affect greatly on motivational aspects of the developers.

The research indicated that due to the silo based structure of the city organization, presenting the created concept ideas internally to different departments varied greatly. Consequently, this complicated receiving comprehensive feedback. On the other hand, the Library-themed concepts were presented inside the city organization with greater effort compared to the other themes. The research brought forth that development need matching with the city’s strategy will proceed more easily, because it has already the approval to become part of the city’s services. In addition, citizens should be provided tools and platforms (virtual and face-to-face) for participating to the innovation process of the city. To reduce overlapping and ease the scaling and usage of the developed new solutions, public administrations should have a register of innovations and different collaborative innovation cases.

The citizen who developed the idea was left with the responsibility to find and contact with a right facet in the city organization. In addition, the public administrations see the citizen's role more as a feedback giver than a potential developer. In general, we notices that cooperation with the city may be difficult; for example to get research permits. The co-creation actualizes as more of fragmented activities than a structured and coherent process. Currently the role of citizens does not reach the extended participation level, but is usually limited to feedback giving. In some cases limited collaboration may occur in specific phases like ideating rather than throughout the whole service development/delivery process. Public organizations need not only a new kind of innovation process, but also organizational changes, such as "a bridge over the silos", which manages and fosters innovation activities in practice.

4.2. RESULTS RELATED TO THE SECOND RESEARCH QUESTION

How to extend current public sector innovation framework and practices to better adapt co-creation approach into innovation process from citizens point of view?

The research highlight that public sector has difficulties to measure the results of the innovation work. Consequently, the public sector organizations should have standardized methods to measure the work and results of service development. With the help of service design methods the various touchpoints of the services can be visualised and thus, the service experience can be estimated

As was earlier stated, the very experiential nature of services highlights the role of customers (Helkkula & Holopainen, 2011; Zeithaml et al., 2013; Randhawa & Scerri, 2015), thus customers have very vital role in service innovations. It is important for the service provider to understand how user experience the service. Consequently, public sector need to develop capacities to adapt citizens to co-creation process of public services. Service design methods could help to involve

customers and key stakeholder in every step of the service development process. Therefore, the fuzzy front end of a service innovation process may be far less "fuzzy" as customers participate already in the front end of public service development.

Services are dynamic processes that take place over a specific period of time and consist of several touchpoints of interaction. Therefore it is is essential for service provider to understand how the value is formed to customers and also to different actors and stakeholders in the service ecosystem. Thus, the ”Big Steps for Little People -Learning Game” concept developers utilise methods like lean business model canvas and value proposition canvas in order to present the service concept to the representatives of the city, potential financiers as well as technical development partners. Consequently, service design principles offers tools to estimate the service from the different actors point of view

4.3. A NEW CO-CREATION PROCESS FOR PUBLIC SECTOR INNOVATION

The public sector innovation process aims not only to develop public services, but also support the surrounding area in order to boost its economic. From both perspectives it would be sensible and appropriate to support the innovation activities of citizens and other stakeholders.

The aforementioned Bason’s model (Figure 1) is appropriate to guide the development process of public services managed by a public organization, but it does not take account of self-organization innovation activities of different actors. If the public innovation process is opened to enable the self-organization of citizens and the service ideas coming from outside the formal innovation process, the complexity of the innovation process and its orchestration will increase significantly.

Based on the literature review and the three empirical cases, we have outlined an alternative way of transmission for the public sector innovation process. The theoretical framework is based on

the thinking of new service logic (SDL, SL and CDL), citizen participation (by Saad-Sulonen 2014) and participants' roles (by Leminen et al., 2014). A service design approach provides practical methods, techniques and tools. The proposed model consists of five phases: (1) frame; (2) challenge; (3) co-create; (4) select & support; and (5) implement. The identified actors in the public sector innovation are besides the public sector organizations, citizens, companies, the third sector, and academia. The role of the public sector organization is to manage and facilitate the open innovation process, and to provide for innovation activities the fasilities (physical or virtual) and tools.

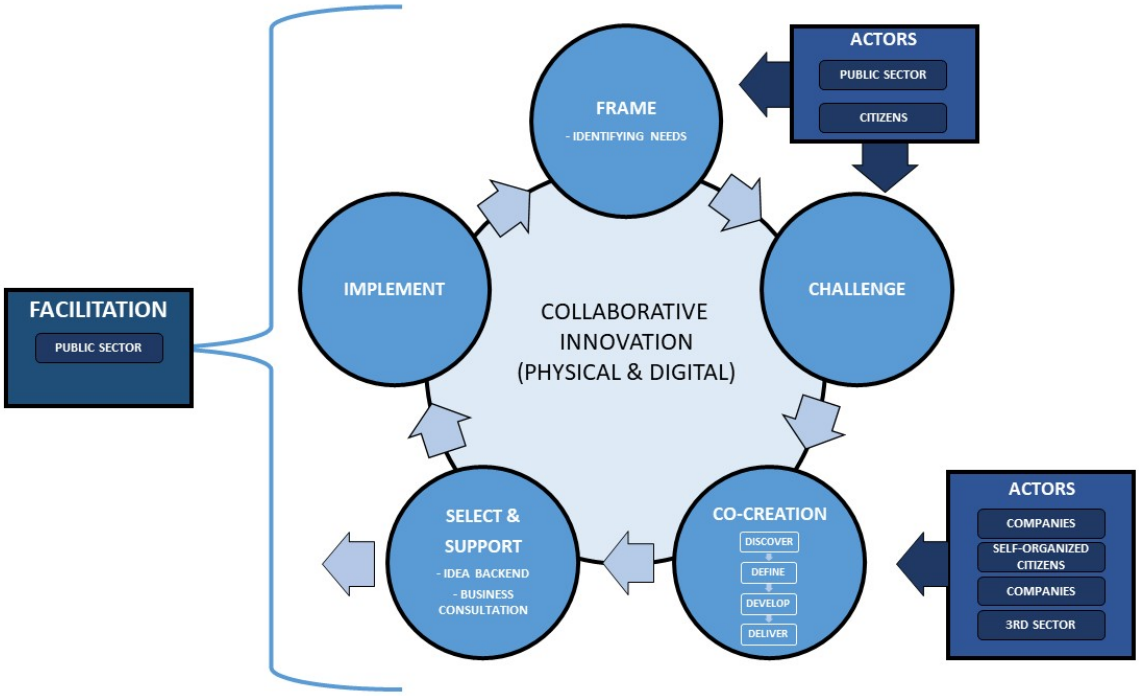

Figure 6. A new co-creation for public sector innovation process based on literature review and case studies

5. CONCLUSIONS

This paper focused on citizen co-creation in the context of public sector innovation. The aim of the study was to find out how could citizens be engaged in designing of public services and what does that require from the public sector innovation process. The paper argued that service design

and current public sector innovation have a similar ethos and service design approach can be utilised to include citizens in public sector innovation process, which makes service design as a practical tool in public sector innovation process. The three empirical cases hinted: First, in the innovation process of the public sector service delivery, which incorporate the aspect of co-creation, the link between public organizations, citizens and other actors is still non-systematic and occasional in nature. Second, the link between the current state of collaborative innovation, where the citizen participation in the public sector service delivery is narrowed to co-creation activities organised by public body, fail to reach the deep level of participation, in which citizens self-organise activities. Third, the current public sector innovation process is not open and leaves the majority of citizens outside of influencing to the public service delivery. The main contribution of this study is an alternative theoretical framework for public sector innovation process, that integrates the new service logic (SDL, SL and CDL), citizen participation (by Saad-Sulonen 2014) and participants' roles (by Leminen et al., 2014), which can be operationalized by service design approach. The model presented in this paper is by no means complete; it is more like the first step. It is, however, authors' hope that it could serve to open up and advance the discussion within the field of innovation research further.

6. DISCUSSION

Public sector organisations have more or less a unified understanding that they must renew itself so that it can adapt to new challenges and also see opportunities, whereby innovation is seen as immediate. Indeed, it has been identified that cities are important common stakeholders due to their role as a facilitator, enabler and orchestrator of activities related to the innovation process. Moreover, current public sector management approaches suggests a new strategic role for public organisations where it acts as the engine of a new kind of innovation process where business,

organizations and individuals are incentivized to autonomously devise and implement new services. New business logics and service design approach are potential theories that can enhance the public sector innovation practices and process. Finally, this study limits to three empirical case studies. However, it is needed to conduct more experiment in order to gain more empirical data on how new business logics and service design approach can emerged to the public sector innovation process.

ACKNOWLEDGMENTS

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